NASA/TM-2002-210005

SIMBIOS Project 2001 Annual Report

Giulietta S. Fargion, Science Applications International Corporation, Maryland
Charles R. McClain, Goddard Space Flight Center, Greenbelt, Maryland

National Aeronautics and
Space Administration

Goddard Space Flight Center
Greenbelt, Maryland 20771

March 2002

Chapter 3

SIMBIOS Project Data Processing and Analysis Results

Giulietta Fargion, Bryan Franz, Ewa Kwiatkowska-Ainsworth, Christophe Pietras and Paul Smith
Science Applications International Corporation (SAIC), Beltsville, Maryland

Sean Bailey, Joel Gales and Gerhard Meister
FutureTech Corporation, Greenbelt, Maryland

Kirk Knobelspiesse and Jeremy Werdell
Science Systems and Applications Inc., Greenbelt, Maryland

Charles McClain and Gene Feldman
NASA Goddard Space Flight Center, Greenbelt, Maryland

3.1 INTRODUCTION

The SIMBIOS Project is concerned with ocean color satellite sensor data intercomparison and merger for biological and interdisciplinary studies of the global oceans (Barnes et al., 2000). Imagery from different ocean color sensors (OCTS, POLDER, SeaWiFS, MOS and OSMI) can now be processed by a single software package using the same algorithms, adjusted by different sensor spectral characteristics, and the same ancillary meteorological and environmental data. This enables cross-comparison and validation of the data derived from satellite sensors and, consequently, creates continuity in ocean color information on both the temporal and spatial scale. The next step in this process is the integration of *in situ* ocean and atmospheric parameters to enable cross-validation and further refinement of the ocean color methodology. The SIMBIOS Project Office accomplishments during 2001 year are summarized under (a) satellite data processing, (b) data merging (c) SeaBASS database, (d) supporting services, (e) sun photometers and calibration activities and (f) calibration round robins. These accomplishments are described below.

3.2 SATELLITE DATA PROCESSING

3.2.1 Satellite Characterization

The SIMBIOS Project has worked closely with our colleagues in the OSMI Program and with the instrument manufacturer to define and assemble the instrument performance characteristics required for the lookup tables for the algorithms that determine OSMI top-of-the-atmosphere radiances. Of special importance in this regard are the spectral responses of the OSMI bands and the spatial co-registration of the detectors. In addition, the Project has opened a collaboration with the GLI Program.GLI is scheduled for launch nor sooner than November 2002. The GLI/SIMBIOS collaboration has centered on the characteristics of the GLI scan mirror as a function of scan angle and the normalization of detector-to-detector gain differences in the GLI bands. Plans are underway for a cross-calibration of the GLI and SeaWiFS near infrared bands, which are used for the determination of the aerosol type and amount for the atmospheric correction algorithms.

3.2.2 MOS Data Collection, Processing, and Distribution

Since February of 1999, the SIMBIOS project has been operating a receiving station at NASA's Wallops Flight Facility (WFF) to acquire data from the German Modular Optoelectronic Scanner (MOS) onboard the Indian IRS-P3 spacecraft. When a pass is acquired at Wallops, the raw files are transferred to the SIMBIOS project at NASA's Goddard Space Flight Center via an automated FTP process. The raw files are then converted to Level-0 format through a software package provided by the Indian Space Research Organization (ISRO). The resulting Level-0 files are made available to the German Remote Sensing Data Centre (DLR-DFD) for archive and distribution. In addition, the SIMBIOS project is processing the data through Level-1B using the standard software provided by the German Institute for Space Sensor Technology (DLR-ISST) (Neumann et al., 1995). All data processed by the SIMBIOS project is made available through the MOS browse system at http://simbios.gsfc.nasa.gov/oceancolor.html. The Level-1B data can be processed to Level-2 using SIMBIOS-developed software tools distributed through SeaDAS.